# Exercises Material Balance

## Exercise – Gas cap drive

The reserves in a reservoir is estimated to *N* = 115x106 stb.

Production and PVT data are listed in the table below. Pi = Pb = 3330 psi

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Pressure  psia | Np  106 stb | Rp  scf/stb | Bo  rb/stb | Rs  scf/stb | Bg  rb/scf |
| 3330 |  |  | 1,2511 | 510 | 0,00087 |
| 3150 | 3,295 | 1050 | 1,2353 | 477 | 0,00092 |
| 3000 | 5,903 | 1060 | 1,2222 | 450 | 0,00096 |
| 2850 | 8,852 | 1160 | 1,2122 | 425 | 0,00101 |
| 2700 | 11,503 | 1235 | 1,2022 | 401 | 0,00107 |
| 2550 | 14,513 | 1265 | 1,1922 | 375 | 0,00113 |
| 2400 | 17,730 | 1300 | 1,1822 | 352 | 0,00120 |

The size of the gas cap is uncertain with the best estimate being m = 0,4. Is this figure confirmed by the production and pressure history? If not, what is the correct value of m?

Assuming there is an uncertainty in both N and m. What are the values of these parameters that best fit the data?